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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,138	09/18/2003	Serge Doucet	U 014823-0	5809
140	7590	05/09/2007		
LADAS & PARRY 26 WEST 61ST STREET NEW YORK, NY 10023			EXAMINER GOLUB, MARCIA A	
			ART UNIT 2828	PAPER NUMBER
			MAIL DATE 05/09/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/665,138	Applicant(s) DOUCET ET AL.	
	Examiner Marcia A. Golub	Art Unit 2828	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 17-40, 43-45, 48-50 and 53-55 is/are pending in the application.  
4a) Of the above claim(s) 4, 5, 10-14, 23-27, 35 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-9, 15, 17-22, 28-34, 37-40, 43-45, 48-50 and 53-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 3/28/03 have been fully considered but are moot in view of new grounds of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-3, 15-19, 22, 28-31, 28-34, 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over MacCormack et al. (6,407,855), hereinafter '855, and further in view of Grubb (5,323,404), hereinafter '404.

Regarding **claims 1, 2, 22 and 32**, Fig 2 of '855 discloses "a multi-wavelength laser source [10] comprising:

- a) a pump laser unit adapted for generating an energy signal [pump]; (3/39-43)
- b) a gain section including a gain medium [11] having an superstructure grating [12-21], said superstructure grating forming a plurality of cavities that are distributed in said gain medium such that different resonant wavelengths resonate in respective ones of said cavities when the energy signal is applied to said gain section, the pump laser unit being adapted for applying the energy signal to said gain section to cause a multi-wavelength laser signal to be generated; (5/20-34)

- c) an output for emitting the multi-wavelength laser signal [output];

'855 does not disclose: "at least two of said cavities being separated from one another".

However, Fig 2 of '404 discloses a multi-wavelength laser source where cavities formed by gratings are separated from one another. Grating pairs 251-252 and 271-272 form spatially separate cavities. '404 discloses such arrangement to be an equivalent alternative to nested cavities.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of '404 into the device of '855 by arranging the gratings to form sequential pairs for at least the purpose of creating lasing cavities that do not overlap.

Regarding **claims 3, 15-19, 28-31, 33, 34, 37**, Figs 1 and 6 of disclose "a multi-wavelength laser source:

3, 37. "wherein the gain section further comprises an amplifying section (5/4)

15. "wherein the gain medium is selected from the set consisting of ... crystals, semiconductor materials [Ge and P] and doped polymer materials (5/20-24);

17. "wherein said gain section includes an optical waveguide [optical fiber] (5/20);

18. "wherein the optical waveguide includes ... an optical fiber (5/20);

19. "wherein said optical waveguide includes a waveguide core and a waveguide cladding; (5/20-22)

28. "An optical transmitter apparatus comprising the multi-wavelength laser source described in claim 1." Intended use of the device recited in the pre-amble that does not result in a structural difference of the device does not distinguish the invention over prior art. (*see MPEP 2111.03*)

29. "A device suitable for providing optical components characterization comprising the multi-wavelength laser source described in claim 1. (*see MPEP 2111.03*)

30. "A device suitable for providing temporal spectroscopy functionality comprising the multi-wavelength laser source described in claim 1 (*see MPEP 2111.03*)

31. "A device suitable for providing material characterization for non-linear effects comprising the multi-wavelength laser source described in claim 1 (*see MPEP 2111.03*)

33. "wherein the pump laser unit is positioned such as to generate the energy signal in a co-propagation relationship with the output; (Fig 1)

34. "wherein the pump laser unit is positioned such as to generate the energy signal in a counter-propagation relationship with the output." (Fig 6)

38,43, 48. "wherein the gain medium is a homogeneously broadened gain medium [single mode fiber]." (5/20-24); (fiber based gain media are homogeneously broadened)

39, 44,49. "wherein the multi-wavelength signal is characterized by at least 8 laser

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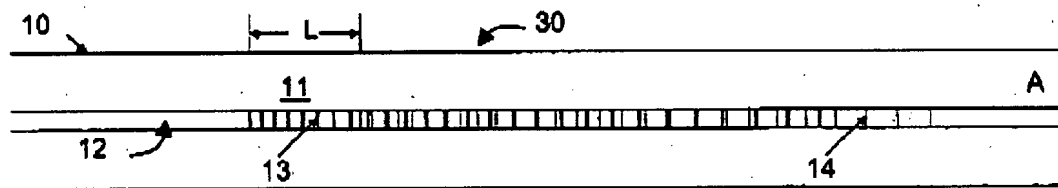
wavelengths" Fig 2 discloses a laser with 10 output wavelengths.

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 6-9, 20, 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over '855 and '404 as applied to claims 1 and 16-19 above, and further in view of Morin (2004/0037505), hereinafter '505.



Regarding **claims 6-9**, Fig 2 of '855 discloses a multi-wavelength laser source as described above, but does not disclose that superstructure grating is composed of two identical chirped Bragg grating overlapping each other. However Fig 1 of '505 disclose an optical fiber with a superstructure grating:

6. "wherein the superstructure grating comprises: a) a first grating segment [13]; b) a second grating segment [14] superposed at least in part on said first grating segment;
7. "wherein the first grating segment is a chirped Bragg grating; (paragraph 0037)
8. "wherein the second grating segment is a chirped Bragg grating;
9. "wherein the first grating segment and the second grating segment are substantially similar to one another." (paragraph 0037)

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of '505 into the device of '855 by making a superstructure grating that is composed of two identical chirped Bragg grating overlapping each other for at least the purpose of enhancing the tunability of the laser,

reducing the physical size of the cavity and producing dispersion compensation.

Regarding **claims 20 and 21**, Fig 2 of '855 discloses a multi-wavelength laser source as described above, but does not disclose the precise location of the superstructure grating. However, paragraph 0037 of '505 discloses an optical fiber with a superstructure grating:

- 20. "wherein the superstructure grating is located in the waveguide core;
- 21. "wherein the superstructure grating is located in the waveguide cladding."

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of '505 into the device of '855 by making the superstructure grating in the cladding and in the core of the optical fiber for at least the purpose of avoiding cladding mode losses.

**Claims 40, 45 and 50** are rejected under 35 U.S.C. 103(a) as being unpatentable over '855 and '404 as applied to claims 38, 44 and 49 above.

Fig 2 of '855 discloses a multi-wavelength laser source as described above, but does not disclose:

40,45,50. "wherein the multi-wavelength signal is characterized by at least 15 laser wavelengths"

53-55. "wherein at least five of said cavities are separated from one another"

'855 discloses a laser with an output of 10 wavelengths and '404 discloses a laser with two non-overlapping cavities. However, changing the disclosed laser output from 10 wavelength to 15 wavelengths would be a simple modification of adding 5 additional sets of gratings that form non-overlapping pairs in the fiber gain medium, as suggested by the reference. (column 5 lines 65-66 of '404)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of '855 by adding 5 more pairs of gratings that form non-overlapping pairs in the optical fiber for at least the purpose of producing a laser with a desired number of wavelengths output.

### **Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

**Contact Info**

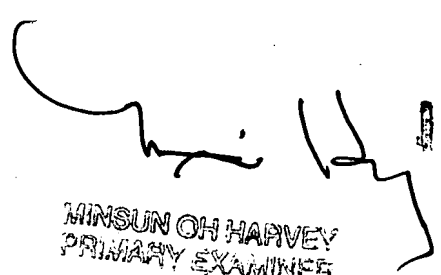
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-8602. The examiner can normally be reached on M-F 9-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 2828

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